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[54] **MODULAR SECURITY DEVICE**

[75] Inventors: **William P. Bialick**, Clarksville, Md.; **Mark J. Sutherland**, Milpitas, Calif.; **Janet L. Dolphin-Peterson**, Belvedere, Calif.; **Thomas K. Rowland**, Los Gatos, Calif.; **Kirk W. Skeba**, Fremont, Calif.; **Russell D. Housley**, Herndon, Va.

[73] Assignee: **Spyrus, Inc.**, Santa Clara, Calif.

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[58] **Field of Search** 395/186, 800, 395/188.01; 380/26, 4, 23, 25, 30, 49, 50; 235/492; 713/200, 201, 202

[56] **References Cited**

U.S. PATENT DOCUMENTS

4,709,136	11/1987	Watanabe	235/379
4,910,776	3/1990	Dyke	380/25
5,191,611	3/1993	Lang	380/25
5,282,247	1/1994	Mclean et al.	380/4
5,297,206	3/1994	Orton	380/30
5,442,704	8/1995	Holtey	380/23
5,457,590	10/1995	Barrett et al.	360/133
5,473,692	12/1995	Davis	380/25
5,491,827	2/1996	Holtey	395/800
5,524,134	6/1996	Gustafson et al.	380/9
5,537,544	7/1996	Morisawa	395/188.01
5,546,463	8/1996	Caputo et al.	380/26
5,548,721	8/1996	Denslow	395/187.01
5,610,981	3/1997	Mooney et al.	380/25
5,630,174	5/1997	Stone, III et al.	395/883
5,640,302	6/1997	Klkinis	361/687
5,694,335	12/1997	Hollenberg	364/514
5,742,683	4/1998	Lee et al.	380/23
5,770,849	6/1998	Novis et al.	235/492
5,790,674	8/1998	Houvener et al.	380/23
5,828,832	10/1998	Holden et al.	713/201
5,878,142	3/1999	Caputo et al.	380/25

FOREIGN PATENT DOCUMENTS

WO 82/03286	9/1982	WIPO .
WO 97/29416	8/1997	WIPO .

OTHER PUBLICATIONS

U.S. application No. 08/869,305, Bialick et al., filed Jun. 4, 1997.

Primary Examiner—Joseph E. Palys
Assistant Examiner—Rijue Mai
Attorney, Agent, or Firm—David R. Graham

[57] **ABSTRACT**

The invention enables a modular, typically portable, device to communicate with a host computing device to enable one or more security operations to be performed by the modular device on data stored within the host computing device, data provided from the host computing device to the modular device (which can then be, for example, stored in the modular device or transmitted to yet another device), or data retrieved by the host computing device from the modular device (e.g., data that has been stored in the modular device, transmitted to the modular device from another device or input to the modular device by a person). In particular, the modular device can include a security module that is adapted to enable performance of one or more security operations on data, and a target module that is adapted to enable a defined interaction with a host computing device. The target module can be embodied by any of a variety of modules having different types of functionality (e.g., data storage, data communication, data input and output, user identification). The modular device can also be implemented so that the security operations are performed in-line, i.e., the security operations are performed between the interface of the host computing device to the modular device and the external communications interface of the target module. Moreover, the modular device can be implemented so that the security functionality of the modular device is transparent to the host computing device.

58 Claims, 10 Drawing Sheets